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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,125	06/29/2001	Shunpei Yamazaki	740756-2330	7248

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EXAMINER	
KEBEDE, BROOK	
ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 04/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/894,125	Applicant(s) YAMAZAKI ET AL.	
	Examiner Brook Kebede	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 June 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. The preliminary amendment filed on December 19, 2001 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

Although the specification has support for EL (electro-luminescence) display device as originally filled, it has no support for organic EL (electro-luminescence) display as amended in Page 16, Paragraph 6, through Page 17. The newly added term "organic" doesn't have support in the disclosure as originally filled.

Similarly the newly added claims, i.e. claims 33-46, have no support in the specification for the term "organic" as the disclosure filled originally. Applicants are required to cancel the new matter in the reply to this Office Action.

Information Disclosure Statement

2. The information disclosure statement filed on June 29, 2001 in Paper No. 2 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Objections

3. Claims 21-30 are objected to because of the following informalities:

Claims 31-30 recite the limitation "A method manufacturing a semiconductor device according to any one of claim ..." Since each of claims 21-30 depend on a single claim, i.e., claim 19 or 20, the preamble seems typo. As suggestion change "A method

manufacturing a semiconductor device according to any one of claim" to -- A method manufacturing a semiconductor device according to claim-- Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 33-46 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 33-46 the limitation "organic EL electro-luminescence display device" in line 2. However, the term "organic" has no support in the specification as the disclosure originally filled. Therefore, the claimed subject matter was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-6, 18, 19, 31 and 32-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-6 and 19 are recite the limitation "removing an oxide film from a surface of the semiconductor film by etching after the irradiation of the laser light" in

lines 5-6, for claims 1-6, and lines 6-7, for claim 19 respectively. Since there is no mention of formation an oxide film before the removing step, the claim lacks antecedent basis.

Claim 18, as being dependent of any one of base independent claims 1-12, recites "wherein said semiconductor device is at least one selected form the group consisting of a personal computer, a video camera, a mobile computer, a player using a recording medium, a goggle-type display, a digital camera, and a projector" Since all the base independent claims are clearly call for process of forming the device which is a thin crystalline silicon film transistor (TFT), the claim does not establish a base how different embodiments of a personal computer or a video camera or a mobile computer or a player using a recording medium or a goggle-type display or a digital camera or a projector are formed. Therefore, the scope of the claim cannot be determined and the claim is vague and indefinite. Also see *Ex parte Lyell* 17 USPQ2d 1548 (8/16/1990).

Claim 31, as being dependent of base independent claim 19, recites "wherein said semiconductor device is at least one selected form the group consisting of a personal computer, a video camera, a mobile computer, a player using a recording medium, a goggle-type display, a digital camera, and a projector" Since the base independent claim is clearly call for process of forming the device which is a thin crystalline silicon film transistor (TFT), the claim does not establish a base how different embodiments of a personal computer or a video camera or a mobile computer or a player using a recording medium or a goggle-type display or a digital camera or a projector are formed. Therefore, the scope of the claim cannot be determined and the claim is vague and indefinite. Also see *Ex parte Lyell* 17 USPQ2d 1548 (8/16/1990).

Claim 32, as being dependent of base independent claim 20, recites "wherein said semiconductor device is at least one selected form the group consisting of a personal computer, a video camera, a mobile computer, a player using a recording medium, a goggle-type display, a digital camera, and a projector" Since the base independent claim is clearly call for process of forming the device which is a thin crystalline silicon film transistor (TFT), the claim does not establish a base how different embodiments of a personal computer or a video camera or a mobile computer or a player using a recording medium or a goggle-type display or a digital camera or a projector are formed. Therefore, the scope of the claim cannot be determined and the claim is vague and indefinite. Also see *Ex parte Lyell* 17 USPQ2d 1548 (8/16/1990).

Claims 33-45, as being dependent of base independent claims 1-12,19, and 20 respectively, recite "wherein said semiconductor device is an organic electro-luminescence display device. " Since the base independent claims are clearly call for process of forming the device which is a thin crystalline silicon film transistor (TFT), the claims do not establish a base how different embodiments of an organic electro-luminescence display device are formed. Therefore, the scope of the claim cannot be determined and the claim is vague and indefinite. Also see *Ex parte Lyell* 17 USPQ2d 1548 (8/16/1990).

Accordingly, claims 18, 31-46 have not been further treated on the merit.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-17 and 19-30 rejected under 35 U.S.C. 102(e) as being anticipated by Yamazaki et al. (US/6,077,731).

Re claims 1-12, 19 and 20, Yamazaki et al. disclose a method of manufacturing a semiconductor device comprising the steps of: forming a semiconductor film comprising silicon over a substrate; irradiating said semiconductor film with laser light in air for crystallizing said semiconductor film; removing an oxide film from a surface of the semiconductor film by etching after the irradiation of the laser light; and leveling the surface of the semiconductor film by heating after removing said oxide film (see Figs. 5A – 6F) by containing the concentration of oxygen or oxide compound less the 1 ppm (i.e. less than 10 ppm as claimed) (see Col. 13, lines 10-18); and leveling the surface of the semiconductor film by heating after the treatment with said hydrofluoric acid in reducing atmosphere such as hydrogen or inert gases such as nitrogen (see Col. 1, line 5 – Col. 128, line 65).

Re claim 13, as applied to claims 1-12 above, Yamazaki et al. disclose all the claimed limitations including the limitation wherein the step of leveling the surface of said semiconductor film is conducted by furnace annealing (see Col. 1, line 5 – Col. 128, line 65).

Re claim 14, as applied to claims 1-12 above, Yamazaki et al. disclose all the claimed limitations including the limitation wherein the step of leveling the surface of said semiconductor film is conducted between 900 and 1200° C see Col. 1, line 5 – Col. 128, line 65).

Re claim 15, as applied to claims 3, 6, 9, and 12 above, Yamazaki et al. disclose all the claimed limitations including the limitation wherein said inert gas is nitrogen.

Re claim 16, as applied to claims 2, 5, 8, and 11 above, Yamazaki et al. disclose all the claimed limitations including the limitation wherein said reducing atmosphere comprises hydrogen see Col. 1, line 5 – Col. 128, line 65).

Re claim 17, as applied to claims 1-12 above, Yamazaki et al. disclose all the claimed limitations including the step of treating a surface of the semiconductor film with a buffered hydrofluoric acid before the irradiation of the laser light see Col. 1, line 5 – Col. 128, line 65).

Re claim 21, as applied to claim 19 above, Yamazaki et al. disclose all the claimed limitations including wherein the step of leveling the surface of said semiconductor film is conducted by furnace annealing see Col. 1, line 5 – Col. 128, line 65).

Re claim 22, as applied to claim 20 above, Yamazaki et al. disclose all the claimed limitations including wherein the step of leveling the surface of said semiconductor film is conducted by furnace annealing see Col. 1, line 5 – Col. 128, line 65).

Re claim 23, as applied to claim 19 above, Yamazaki et al. disclose all the claimed limitations including wherein the step of leveling the surface of said semiconductor film is conducted between 900 and 1200° C see Col. 1, line 5 – Col. 128, line 65).

Re claim 24, as applied to claim 20 above, Yamazaki et al. disclose all the claimed limitations including wherein the step of leveling the surface of said semiconductor film is conducted between 900 and 1200° C see Col. 1, line 5 – Col. 128, line 65).

Re claim 25, as applied to claim 19 above, Yamazaki et al. disclose all the claimed limitations including wherein said atmosphere in said leveling step contains an inert gas see Col. 1, line 5 – Col. 128, line 65).

Re claim 26, as applied to claim 20 above, Yamazaki et al. disclose all the claimed limitations including wherein said atmosphere in said leveling step contains an inert gas see Col. 1, line 5 – Col. 128, line 65).

Re claim 27, as applied to claim 19 above, Yamazaki et al. disclose all the claimed limitations including wherein said atmosphere in said leveling step contains a reducing atmosphere see Col. 1, line 5 – Col. 128, line 65).

Re claim 28, as applied to claim 20 above, Yamazaki et al. disclose all the claimed limitations including wherein said atmosphere in said leveling step contains a reducing atmosphere see Col. 1, line 5 – Col. 128, line 65).

Re claim 29, as applied to claim 19 above, Yamazaki et al. disclose all the claimed limitations including further comprising a step of treating a surface of the semiconductor film with a buffered hydrofluoric acid before the irradiation of the laser light see Col. 1, line 5 – Col. 128, line 65).

Re claim 30, as applied to claim 20 above, Yamazaki et al. disclose all the claimed limitations including a step of treating a surface of the semiconductor film with a buffered hydrofluoric acid before the irradiation of the laser light see Col. 1, line 5 – Col. 128, line 65).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure Zhang et al. (US/5,481,121), Yamazaki (US/5,514,879), Zhang et al. (US5,578,520), Zhang et al. (US/5,604,360), Ohtani et al. (US/5,605,846), Teramoto

(US/5,620,910), Kousai et al. (US/5,795,795), Yamazaki et al. (US/5,693,541), Mitanaga et al. (US/5,808,321) also disclose similar inventive subject matter including laser annealing process of the amorphous silicon in air.

Correspondence

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brook Kebede whose telephone number is (703) 306-4511. The examiner can normally be reached on 8-5 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Brook Kebede

April 21, 2002

LONG PHAM
PRIMARY EXAMINER